

IMPLEMENTING A SAFETY MANAGEMENT SYSTEM INDUSTRY CASE STUDIES MASSEY UNIVERSITY SCHOOL OF AVIATION: MILSON FLIGHT SYSTEMS CENTRE

CIVIL AVIATION AUTHORITY OF NEW ZEALAND





IMPLEMENTING A SAFETY MANAGEMENT SYSTEM

INDUSTRY CASE STUDIES

MASSEY UNIVERSITY SCHOOL OF AVIATION: MILSON FLIGHT SYSTEMS CENTRE

The CAA SMS Case Study Series aims to provide an insight into selected aviation organisations that have started the journey of implementing a Safety Management System (SMS). These case studies have been developed through; interviews with key staff and crew, research into their safety and risk management policies, procedures and practices, and reference to the CAA SMS Forums held in 2013. The content was not sourced through documentation or activities relating to regulatory process.

DEVELOPED: JUNE 2014

SAFETY MANAGEMENT SYSTEMS

Since 2012, the Civil Aviation Authority of New Zealand have developed resources and guidance material to actively support the implementation of a Safety Management System (SMS) in all sectors of the aviation industry. This has included the Advisory Circular AC00-4 *Safety Management Systems*, the publication of the *CAA Safety Management System Implementation Strategy* and an Industry Resource Kit including four guidance booklets.

The Civil Aviation Authority defines an SMS as “a systematic approach to managing safety, including the necessary organisational structures, accountabilities, policies and procedures”. These case studies aim to demonstrate examples of this systematic approach. There are no confirmed Regulations requiring an SMS to be implemented as yet, however there is significant value in proactively doing so. These case studies highlight how proactive implementation is possible, and what the advantages are in doing so.

It's important to remember that the implementation of an SMS is a journey rather than a destination. Whilst aviation organisations should set objectives to measure success and progress, it also means every step taken along the way is valuable.

13 ELEMENTS OF A SAFETY MANAGEMENT SYSTEM

01

SAFETY POLICY AND ACCOUNTABILITY

02

COORDINATED EMERGENCY RESPONSE PLANNING

03

DEVELOPMENT, CONTROL AND MAINTENANCE OF SAFETY MANAGEMENT DOCUMENTATION

04

HAZARD IDENTIFICATION

05

RISK MANAGEMENT

06

SAFETY INVESTIGATION

07

MONITORING AND MEASURING PERFORMANCE

08

MANAGEMENT OF CHANGE

09

CONTINUAL IMPROVEMENT OF THE SMS

10

INTERNAL AUDIT PROGRAMME

11

MANAGEMENT REVIEW

12

SAFETY TRAINING AND EDUCATION PROGRAMME

13

COMMUNICATION OF SAFETY CRITICAL INFORMATION

MASSEY SCHOOL OF AVIATION AND MILSON FLIGHT SYSTEMS CENTRE: AN OVERVIEW

MASSEY UNIVERSITY SCHOOL OF AVIATION HAVE COMMITTED TO HAVING A 'BEST PRACTICE' APPROACH TO SAFETY MANAGEMENT SYSTEMS. THIS MEANS THAT STUDENTS AT THE START OF THEIR AVIATION CAREER BECOME A PART OF A SYSTEM WHICH CAN INSPIRE THEM TO ADOPT A SIMILAR APPROACH AT THEIR FIRST FLYING JOB.

BACKGROUND

The Massey University School of Aviation was established in 1990, and first offered the Bachelor of Aviation (Air Transport Pilot) soon after in 1993. This three year full-time degree provides students with the opportunity to undertake both practical and theoretical study. Two of the three years include the students' flying training; upon graduation from the course, students hold a New Zealand Commercial Pilots License (CPL) with Multi Engine and Instrument Rating, plus all credits for the New Zealand Air Transport Pilot License (ATPL) theory examinations. In 2011, Massey University School of Aviation formed a partnership with the Air New Zealand Aviation Institute to facilitate graduates undertaking an 'airline induction course', which provides preferred status for employment.

The flying training is conducted from Milson Flight Systems Centre (MFSC) based in Palmerston North, in accordance with the University's 'Approval of Equivalence' from CAA NZ which allows the University to deliver and examine all academic components of the students' pilot licences and ratings. Under Equivalence a Massey student pilot will undergo thirteen Flight Examinations during their ab-initio "wings" training, each one at a particular phase as the student progresses through the degree programme. Most of these Flight Examinations are conducted by specially authorised senior Massey staff, although CAA (ASL) conduct a percentage of the Flight Examinations to ensure sampling by the Authority. Once all components of the Equivalence Approved syllabus are completed a student pilot may apply for their CPL(A) and multi-engine instrument rating (MEIR). Massey University, uniquely in New Zealand, conducts a scenario based training (SBT) syllabus which enables the Flight Instructors to exploit the capabilities of Garmin 1000 equipped Diamond fleet and challenges the students with 'real world' situations that develops their decision making and airmanship.

The University's Air Transport Pilot course is a programme that focuses on the professional development of the student pilots. It is benchmarked at 'Best Practice', but, the very complexity of the programme and differences that set it apart create their own challenges. The integration of an SMS that complements the Quality Management System (QMS) enhances control and coordination of the programme and all the people involved with it.

The Massey University School of Aviation was the first school in New Zealand to be fully certified for flight training under Civil Aviation Regulations Part 141. MFSC is run by Chief Executive Officer, Ashok Poduval, with 25 Flight Instructors under the control of Craig Whyte, the Chief Flying Instructor.

Deputy Chief Flying Instructor Paul Kearney is also the Quality Assurance Manager, and was responsible for the implementation of their SMS. Dr. Ritchie deMontalk is the Manager Aviation Safety, and he is assisted by the Flight Safety Officer, Ross Monson and the Assistant Safety Officer, Nick Jenkins. MFSC also have their own in-house maintenance capability, with the Maintenance Controller, Eric Reynolds, coordinating the activities of a team of engineers from Fieldair Engineering who provide the maintenance under a service contract.

OPERATIONS

MFSC operates two aircraft types; a fleet of 12 Diamond DA-40 single engine trainers, and 2 Diamond DA-42 Twin Engine Trainers. They also operate 6 fixed base simulators to facilitate ground training. MFSC undertake approximately 12,000 hours of flying activity each year, with an average of 110 students, all of whom commence at an ab initio level. The students remain with MFSC for two years, during which time they undertake approximately 190 hours flying on the DA-40, and 30 on the DA-42, as well as extensive ground school time.

THE SAFETY MANAGEMENT SYSTEM CONTEXT

Massey University School of Aviation have invested considerable time and resources into the development of an SMS that both their students and the staff actively participate in. As outlined in their 'Management and Policy' Manual, "SMS embraces the principle that the identification and management of risk increases the likelihood of accomplishing the goals and objectives", and was developed with direct reference to guidance from ICAO Document 9859: *Safety Management Manual* and the UK CAA Safety Regulation Group *Safety Management Systems – Guidance for Small, Non-Complex Organisations*.

Massey has been able to develop and implement an SMS with some key features, including a series of flight safety briefings for students based on their training progression. The appointment of key safety staff to facilitate the system, and an active and well-used safety reporting system.

Perhaps most impressive is the online portal that helps maintain a high level of SMS consciousness for their staff and students. Approximately 4 years ago, the School of Aviation commenced the use of a closed intranet portal for their students and staff. The portal provides access to flight documents (including Standard Operating Procedures, route guides and flight logs), policy documents (including the Operations and Maintenance and Training and Assessment Manuals), ground work content, and most relevant for this context, Safety Management System information, publications and systems. Students are able to review key safety policy and procedural information, submit hazard and occurrence reports, review feedback to their reports they submitted, and gain information about key operational safety issues through specially-developed Safety Bulletins and other publications.

MASSEY UNIVERSITY SCHOOL OF AVIATION SAFETY MANAGEMENT SYSTEM: A CLOSER LOOK

The following information provides an overview of Massey School of Aviation and MFSC's unique approach to 5 elements of their Safety Management System, in alignment with the 13 elements outlined in the CAA Advisory Circular *AC00-4 Safety Management Systems*. Some of their successes to date and future enhancement initiatives have been highlighted via the following five select elements from the CAA SMS framework.

KEY FEATURES OF MASSEY UNIVERSITY SCHOOL OF AVIATION'S SMS:

- Comprehensive SMS policy and procedures documentation endorsed by the CEO of the School.
- Online portal that facilitates safety reporting and access to publications and other SMS resources.
- Flight safety briefings delivered to all students throughout their training programme.
- Continual improvement activities including regular Safety Action Group meetings.

13 ELEMENTS OF A SAFETY MANAGEMENT SYSTEM

01

SAFETY POLICY AND ACCOUNTABILITY

02

COORDINATED EMERGENCY RESPONSE PLANNING

03

DEVELOPMENT, CONTROL AND MAINTENANCE OF SAFETY MANAGEMENT DOCUMENTATION

04

HAZARD IDENTIFICATION

05

RISK MANAGEMENT

06

SAFETY INVESTIGATION

07

MONITORING AND MEASURING PERFORMANCE

08

MANAGEMENT OF CHANGE

09

CONTINUAL IMPROVEMENT OF THE SMS

10

INTERNAL AUDIT PROGRAMME

11

MANAGEMENT REVIEW

12

SAFETY TRAINING AND EDUCATION PROGRAMME

13

COMMUNICATION OF SAFETY CRITICAL INFORMATION

03

ELEMENT 03: SAFETY DOCUMENTATION

One of the foundations of a consistent and effective SMS is the documentation of policy, procedures and practices. As part of the intranet site that Massey maintains, students and staff are able (and are actively encouraged) to access SMS resources. This includes the 'Management and Policy Manual', which outlines all SMS policy and procedures specifically for the Massey School of Aviation. Within it is the school's Safety Policy, which is endorsed by the CEO of the Massey School of Aviation.

The safety-related contents of the Manual has been modelled on ICAO's SMS elements, and includes such key features as a description of the reporting processes and policies (including the application of Just Culture), specific safety responsibilities, safety-related performance measures for the School, and how continual improvement is assured through the conduct of such activities as the meeting of the Safety Action Group.

04

ELEMENT 04: HAZARD IDENTIFICATION

As Massey's safety policy states, "the systematic identification and control of all major hazards is the fundamental process in this SMS." This can be achieved through a safety reporting process. Massey School of Aviation staff and students are encouraged and expected to report using either the 'Occurrence Report', 'Operational Hazard Report' or a 'Quality Improvement / Complaint / Concern' form, which are sourced through their online portal. Massey then enters all reports into a hazard register and commences their action management processes for addressing each report. It is also possible for someone who submits a report, to review feedback through the portal.

The staff often find that when a student first arrives at the school, they need to educate them in being able to openly report (which may be different to the culture fostered in a traditional school system) without fear of retribution, so to proactively enhance safety. Massey have therefore committed to a Just Reporting Policy, which states that "...no action will be taken against any student, flight instructor, or employee who discloses a safety concern through the hazard reporting system, unless such disclosure indicates, beyond any reasonable doubt, an illegal act, gross negligence, or a deliberate or wilful disregard of regulations or procedures". This has helped students in particular in recent years, with reporting numbers increasing progressively.

07

ELEMENT 07: MEASURING PERFORMANCE

One of the more challenging parts of an SMS is setting then measuring safety performance. However, overall performance measures can simply be established on the ‘business as usual’ items of the SMS. The following are three of those performance measures outlined in Massey’s documentation, and are a good example of how performance measures can be simple yet measurable.

- All Hazard Reports are processed within 10 working days.
- All occurrence notification/reporting within CAA requirements.
- All quality improvement forms are initially actioned within 10 working days and closed within 30 working days, as applicable.

Massey are currently working on the development of their safety objectives, targets and performance indicators for the coming few years, to further assist in continual improvement. Their Safety Review Board and their Safety Action Group are geared to support this process.

09

ELEMENT 09: CONTINUAL IMPROVEMENT

The element of ‘continual improvement’ can take many forms, and Massey has established a few different ways to ensure that the SMS evolves over time. One of these ways is through their Safety Action Group, which consists of the Quality Assurance Manager, Manager Aviation Safety and Safety Officers. The Safety Action Group is responsible for identifying safety issues and risks as well as identifying and coordinating safety-related changes. This includes conducting risk assessments in the context of each change, and sharing findings and outcomes of their analysis conducted on safety matters.

Another noteworthy activity that Massey undertook in 2012 was to conduct a gap analysis on their SMS, which provide them with a prioritised list of what they could continue to improve upon. The gap analysis was conducted by an external party to so provide them with the independence to gain a more objective outcome.

12

ELEMENT 12: SAFETY TRAINING AND EDUCATION PROGRAMME

One of the best ways to see an SMS ‘in action’ is through the conduct of regular training for the different parts of your organisation. In Massey’s case, the conduct of training and education is clearly their ‘bread and butter’, and they’ve been able to utilise their training framework for students to increase their knowledge of safety systems and practices, thus allowing them to be a more active part of the SMS overall. One of the first lessons students are given is how and why to submit safety reports, including a discussion about what a just safety reporting culture is.

One of the initiatives Massey undertook was the analysis of trends regarding the most common errors made by students at various points in their training progression, and then developing three flight safety briefing sessions on what these specific errors are and how to reduce the risk of them occurring. Massey are now working on a series of flight safety briefings which will span the entirety of the students’ training programmes, with the aim of progressively building student’s awareness of key safety risk areas and improve their skills enabling them to be a productive part of the SMS.

ADVICE FOR OTHERS

IMPLEMENTING A SAFETY MANAGEMENT SYSTEM

Paul Kearney, in his role as Quality Assurance Manager, talked through his key pieces of advice for others in industry:

ON IMPLEMENTING A SAFETY MANAGEMENT SYSTEM...

A lot of organisations may worry that there is an insurmountable amount of work in implementing an SMS. However, for those with Quality Management Systems already, it's mostly done! So take heart that it's easier than what it looks.

ON SAFETY REPORTING...

It's important to educate all staff (and students in our case) to know not only how, but why safety reports must be submitted.

ON SAFETY RESPONSIBILITIES...

Be sure to share safety responsibilities amongst as many people as possible – this can include students and staff.

SAFETY MANAGEMENT SYSTEMS: KEY STAFF VIEWPOINTS



DR. RITCHIE DE MONTALK – MANAGER AVIATION SAFETY, MASSEY UNIVERSITY SCHOOL OF AVIATION

In addition to holding the role of Chief Flight Examiner for Massey, Ritchie also took on the role of Manager Aviation Safety. In this role, Ritchie works closely with Paul Kearney in his capacity as Quality Assurance Manager.

Ritchie has been a part of evolving Massey's SMS from being predominantly reactive, to one that is proactive, with an appropriate structure in place now to facilitate predictive capabilities in the future. The structure provide by an SMS helps in coordinating all of the different activities and tasks that he and his staff undertake, which in turn has enabled tangible positive outcomes for the students.

One of the underpinning elements to Massey's SMS success is the involvement of the Safety Officers he has to assist him (including Ross Monson). They make it possible to keep in touch with operational matters (given that they are also instructors), to reach out and involve more students, and to assist in projects and tasks.

Ritchie views the implementation of an SMS to be an essential part of their students' education.



ROSS MONSON – FLIGHT SAFETY OFFICER

Ross is one of the Massey's Flight Instructors, and for the last two years has also been the Safety Officer that works under the Manager Aviation Safety. This role includes the conduct of flight safety briefings, actively promoting safety reporting to other staff and students, being a member on the Safety Action Group, and various other tasks which contribute to the implementation and improvement of the Safety Management System.

Over the past couple of years, Ross has seen how safety reporting can be used as a proactive tool for safety improvement, especially when students submit reports of their own perceived risks. Getting students involved has been critical, and despite the challenge of having new students every two years, it's been possible to inculcate a strong and positive reporting culture. Having the online reporting capability has greatly helped.

When asked about what advice he would give others in implementing an SMS, Ross outlined that a bit of patience is required (as nothing happens instantly), to figure out what works best for each individual organisation, and to involve as many people as possible.



ZK-M...



99 Diamond
DA40 Diamond Star

Diamond DA 40 System 0321.22
© 2002-09 Garmin Ltd or its

DATABASE

- Checklist File N/A
- Basecamp Load 2.00
- SafeTaxi N/A
- Terrain 2.04

PILOT PROFILE
DEFAULT PROFILE

Press FMS knob to change profile
Press "ENT" or rightmost softkey
to continue

FUEL QTY INDICATOR MAX 24 US GAL
AFTER 15 MIN TO USE ENTIRE TANK CAPACITY
MAX DIFFERENCE 1.0000 TANK @ 40 US GAL





FOR MORE INFORMATION CONTACT CAA STAFF AT

Email: sms@caa.govt.nz

Web site: www.caa.govt.nz



